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PLANARIA MORGANI n. sp

BY N. M. STEVENS AND A. M. BORING.

Size.—Length 10–12 mm., width in the region of the pharynx 1.6 mm., at the level of the eyes 1 mm.

Form.—Head wedge-shaped, no auricular appendages, posterior end obtuse, thickness slight compared with *Planaria maculata* or *P. simplicissima* (Plate I, figs. 1 and 2).

Color.—White and translucent; digestive tract often colored green, yellow, brown, or red by food recently ingested.

Eyes.—Two, crescent-shaped, situated far back and near together (Pl. I, figs. 1–4).

Nervous System.—Cephalic ganglia large and distinct, connected by a broad commissure, lateral nerve cords as in *P. maculata*, two prominent nerves extending forward from below the eyes (Plate I, fig. 4).

Pharynx.—Single, much elongated, centrally located in forms with functional sexual organs, posterior to the center in forms which are reproducing asexually (Plate I, figs. 1 and 2). Digestive tract as in the typical triclads with little anastomosis of branches (fig. 3).

Reproductive Organs.—Ovaries two, situated ventrally between the anterior axial division of the gut and its first lateral branches, sometimes lobed, and often extending nearly to the dorsal epidermis (Plate I, fig. 4). Oviducts following a spiral course dorsal and slightly lateral to the nerve cords, back to the region of the atrial organs, where they converge and unite into a short common oviduct which enters the atrium dorsal to the opening of the uterus stalk, instead of entering a vagina as in *P. maculata* (Curtis, '02). Spermatozoa are often found massed at the anterior end of the oviducts. Yolk glands lie between all of the main branches of the gut dorsal to the testes. Testes many, irregular in form and variable in size, scattered between the branches of the gut, for the most part ventral and median to the nerve cords, and extending from the region of the ovaries to the posterior end of the pharynx (fewer and larger than in *P. maculata*). Distinct seminal vesicles extending posteriorly from the last pair of testes (*v.s.*, Plate I, figs. 5 and 6). Vasa deferentia broad, short and

only slightly coiled, entering the anterior enlargement of the lumen of the penis nearly at right angles. Penis short and broad, nearly filling the atrium (similar to that of *P. maculata*). Uterus large, dorsal, extending forward nearly to the pharynx chamber; stalk of the uterus passing to the left side, dorsal to the vasa deferentia and oviducts, and entering the atrium laterally and ventral to the entrance of the common oviduct (Plate I, figs. 5 and 6).

Reproduction by Fission.—Like *Planaria maculata*, this species reproduces both sexually and asexually. Indications that fission had occurred were observed in May, 1901–1905. In May, 1905, while all the individuals in one branch of a certain stream were sexually mature and depositing egg-capsules, those in another branch of the same stream were found in all stages of fission and regeneration (Plate I, figs. 7–10). During the last week of May and first week of June a few individuals showed regenerating atrial organs. The same difference, as to sexual maturity and fission, was observed in collections from the two branches of the stream in October, and at the date of writing (February 7th) there are no sexually mature worms among the thirty to forty specimens which were reproducing by fission when brought into the laboratory in October. About half of the number have divided in the aquarium. Fission occurs at a point nearer the pharynx than in *P. maculata* (fig. 7).

Regeneration.—Both anterior and posterior regeneration at all levels proceeds much as in *P. simplicissima*, but both regeneration and form regulation are more rapid.

Habitat.—*Planaria morgani* is found on the under side of stones and dead leaves in a small stream, one branch of which flows through the Bryn Mawr College campus. The authors have not found it elsewhere.

EXPLANATION OF PLATE I.

Fig. 1. Freehand sketch of living planarian, magnified five times. Atrial organs present (a). Limits of the digestive tract indicated by dotted outline.

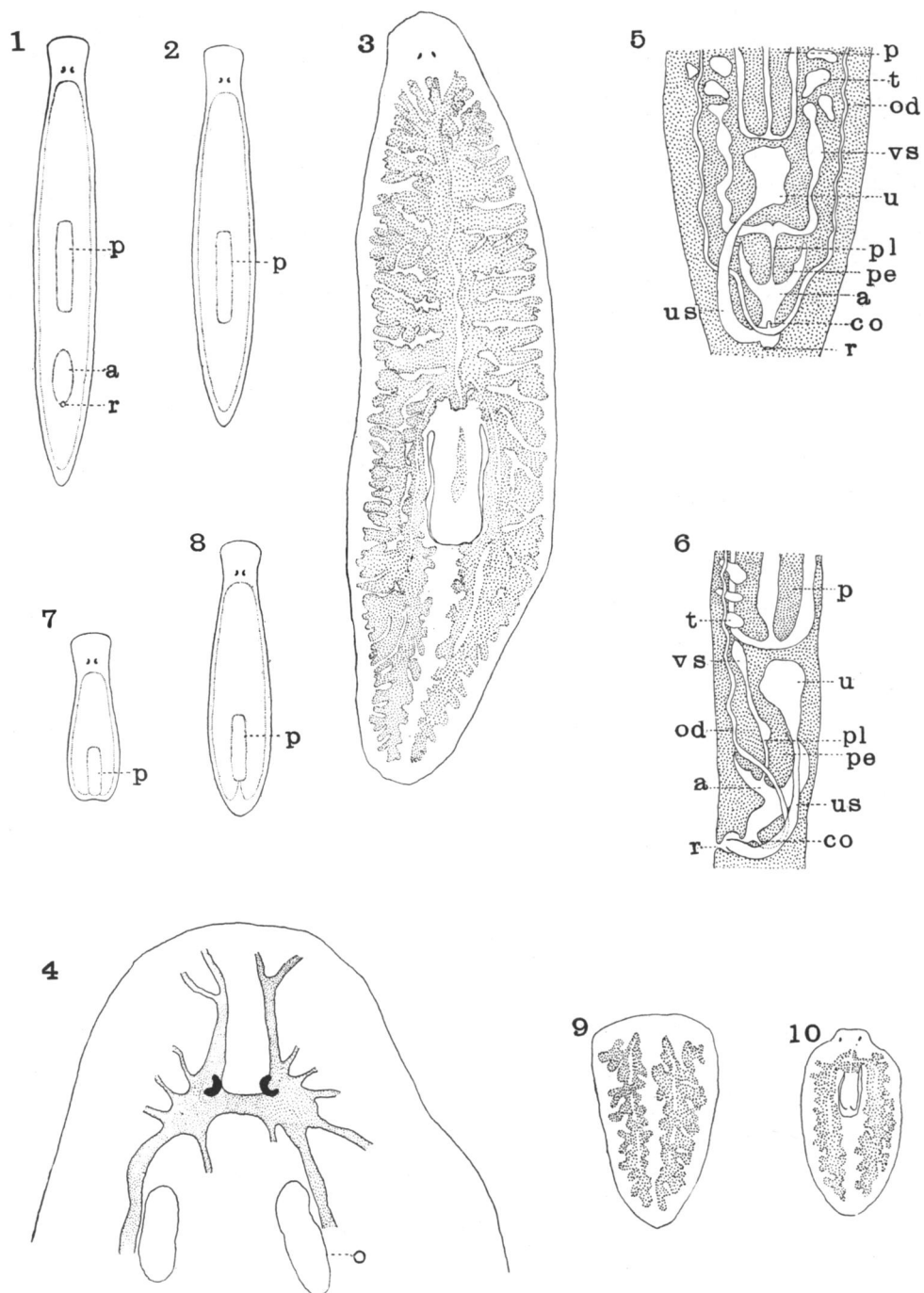
Fig. 2. Same of an individual without atrial organs.

Fig. 3. Camera drawing of whole mount, showing pharynx and branches of the digestive tract. Magnification 10 diameters.

Fig. 4. Reconstruction from camera drawings of frontal sections, showing cerebral ganglia, lateral nerve cords, cephalic nerves, eyes, and ovaries. Mag. 35 d.

Fig. 5. Reconstruction of reproductive system from a series of frontal sections, dorsal aspect. *p.*=pharynx. *t.*=testis. *od.*=oviduct. *v.s.*=vesicula seminalis. *u.*=uterus. *p.l.*=penis lumen. *pe.*=penis. *a.*=atrium. *c.o.*=common oviduct. *r.*=reproductive pore. *u.s.*=uterus stalk. Mag. 10 d.

- Fig. 6. Similar reconstruction from sagittal sections. Left-hand aspect. Oviduct and vas deferens of right side omitted. Lettering as above. Mag. 10 d.
- Fig. 7. Freehand sketch of the anterior piece of a living specimen soon after fission. Mag. 5 d.
- Fig. 8. Similar drawing from a larger anterior piece several days after fission, showing considerable regeneration.
- Fig. 9. Posterior piece soon after fission, showing the two separate branches of the digestive tract. Mag. 10 d.
- Fig. 10. Similar posterior piece after several days' regeneration (probably about a week). Branches of digestive tract united and new pharynx and eyes formed. Mag. 10 d.



STEVENS AND BORING. PLANARIA MORGANI N. SP.